

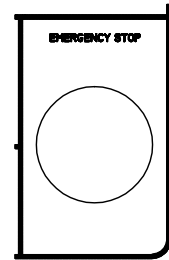
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## ***Emergency Stop***

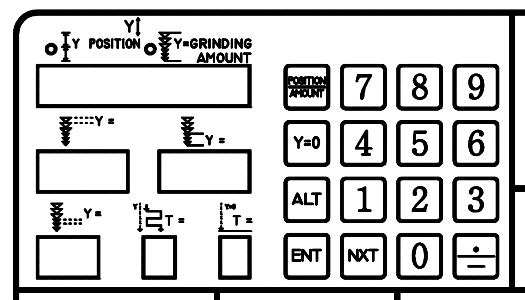
The emergency stop push button shall be always pushed down **BEFORE** the machine is powered up.



If the emergency stop push button is not pushed down before the machine is powered up, the display of the first row will blink with “E-STOP” alert message and the other displays will go off.

In the meantime, the control functions of all the buttons on the control panel will be disabled.

To amend this alert, simply push down the emergency stop push button and release it again.



Pressing down this red emergency stop push button will force to stop **ALL** motors of the machine and the display of the first row will blink with “E-STOP” alert message.

However, The magnetic chuck will remain active.

To release red emergency stop push button, user may, depending on the model of the machine, turn the button head according to the direction shown on the head or simply pull up the button head.

After the red emergency stop push button being pressed down, the automatic cycle will be immediately terminated and all the original data will be restored.

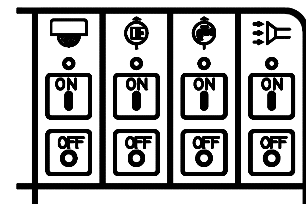
## ***ON/OFF Control***

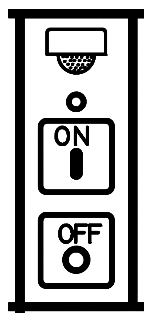
### ***Spindle Wheel ON/OFF Control***

#### ***To turn ON the spindle wheel***



Press ON push button to turn on the spindle wheel and the indicator for the spindle wheel will light up.





***To turn OFF the spindle wheel***

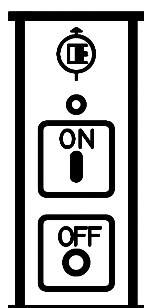


Press OFF push button to turn off the spindle wheel and the indicator for the spindle wheel will go off.

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***Hydraulic Pump ON/OFF Control***

***To turn ON the Hydraulic pump***



Press ON push button to turn on the hydraulic pump and the indicator for the hydraulic pump will light up.

---

***To turn Off the Hydraulic pump***

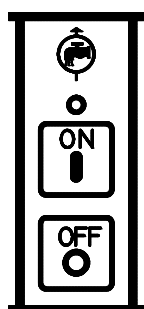


Press OFF push button to turn off the hydraulic pump and the indicator for the hydraulic pump will go off.

---

***Coolant Motor ON/OFF Control***

***To turn ON the coolant motor***



Press ON push button to turn on the coolant motor and the indicator for the coolant motor will light up.

---

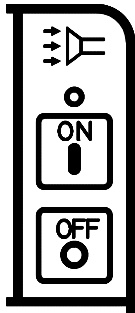
***To turn Off the coolant motor***



Press OFF push button to turn off the coolant motor and the indicator for the coolant motor will go off.

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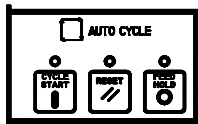
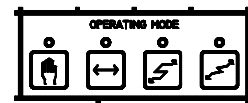
***Vacuum Cleaner ON/OFF Control***

***To turn ON the vacuum cleaner***

Press ON push button to turn on the vacuum cleaner and the indicator for the vacuum cleaner will light up.

***To turn Off the vacuum cleaner***

Press OFF push button to turn off the vacuum cleaner and the indicator for the vacuum cleaner will go off.

***OPERATING MODE Selection***

When the indicator above the RESET button is ON, user can use the right four push buttons to select the desired grinding mode: Manual, Slot, Surface, or Zigzag grinding mode.

***To select Manual grinding mode***

Press this button to select the Manual grinding mode, and the indicator for Manual grinding will light up.

In Manual grinding mode, automatic down-feed and cross-feed are disabled.

***To select Slot grinding mode***

Press this button to select the Slot grinding mode, and the indicator for Slot grinding will light up.

In Slot grinding mode, automatic cross-feed is disabled.

***To select Surface grinding mode***

Press this button to select the Surface grinding mode, and the indicator for Surface grinding will light up.

In Surface grinding mode, automatic down-feed and cross-feed are both enabled.

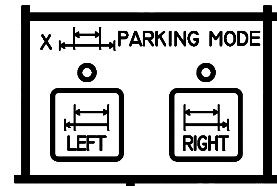
**To select Zigzag grinding mode**



Press this button to select the Zigzag grinding mode, and the indicator for Zigzag grinding will light up.

In Zigzag grinding mode, automatic down-feed and cross-feed are both enabled.

**PARKING MODE Selection**



**To Park the Working Table on the Left**



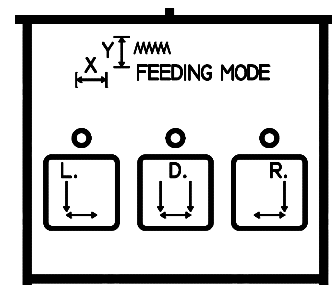
Press the LEFT button and the indicator above this button will light up. The working table will part on the left-hand side on the completion of fully automatic cycle.

**To Park the Working Table on the Right**

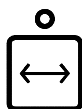


Press the RIGHT button and the indicator above this button will light up. The working table will part on the right-hand side on the completion of fully automatic cycle.

**FEEDING MODE Selection**

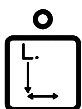


**In Slot grinding mode**

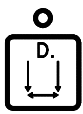


When the machine is in Slot grinding mode and automatic cycle is started:

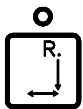
**L. Button**



If the L. button is selected and the indicator above this button is lit up, the spindle wheel will start down-feed when the working table reaches to the left stroke.

**D. Button**

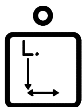
If the D. button is selected and the indicator above this button is lit up, the spindle wheel will start down-feeding whenever the working table reaches to the left or to the right stroke.

**R. Button**

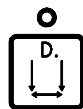
If the R. button is selected and the indicator above this button is lit up, the spindle wheel will start down-feeding when the working table reaches to the right stroke.

**In Surface grinding mode**

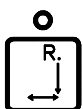
When the machine is in Surface grinding mode and automatic cycle is started:

**L. Button**

If the L. button is selected and the indicator above this button is lit up, the saddle will start cross-feeding when the working table reaches to the left stroke.

**D. Button**

If the D. button is selected and the indicator above this button is lit up, the saddle will start cross-feeding whenever the working table reaches to the left or the right stroke.


**R. Button**

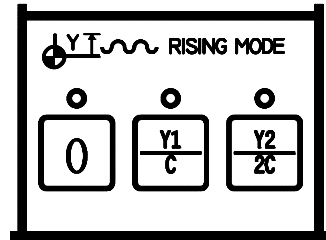
If the R. button is selected and the indicator above this button is lit up, the saddle will start cross-feeding when the working table reaches to the right stroke.




**RISING MODE Selection**

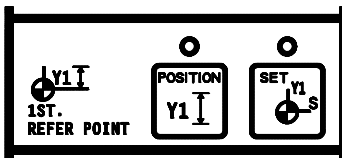
**0 Button**

○  
 When this button is selected and the indicator above this button is lit up, the spindle wheel will not rise up on the completion of automatic grinding cycle.

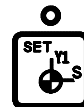


**Y1/C Button**

○  
 When this button is selected and the indicator above this button is lit up, the spindle wheel will rise up along the column on the completion of automatic grinding cycle.




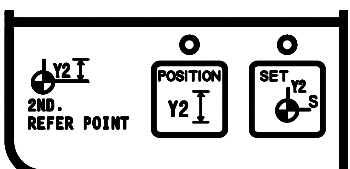
If the value of the 1st REFER POINT is set and the indicator above is lit up before the automatic cycle is started, the spindle wheel will rise up to the position where the 1st REFER PIONT is set.



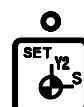
If the value of the 1st REFER POINT is NOT set before the automatic cycle started, the spindle wheel will rise up a distance which equals to the value of the total grinding amount.

**Y2/2C Button**

○  
 When this button is selected and the indicator above this button is lit up, the spindle wheel will rise up along the column on the completion of automatic grinding cycle.

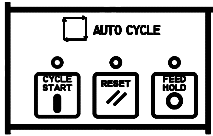


If the value of the 2nd REFER POINT is set and the indicator above is lit up before the automatic cycle is started, the spindle wheel will rise up to the position where the 2nd REFER PIONT is set.

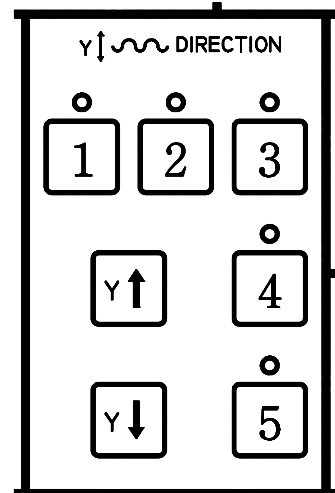


If the value of the 2nd REFER POINT is NOT set before the automatic cycle started, the spindle wheel will rise up a distance which equals to as twice the value of the total grinding amount.

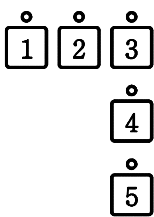
### ***DIRECTION Control***



The DIRECTION control function is valid only when the RESET button is selected and when one of the grinding modes other than Manual grinding mode is selected.



### ***Numeric Buttons***



The speed of the rapid movement is set by the numeric buttons: the larger number of the button is selected, the faster the rapid movement will be.

### ***Rapid-Up Button***



Pressing this button will bring the spindle wheel upward along the column at rapid speed; and releasing it will immediately stop the rapid upward movement of the spindle wheel.

### ***Rapid-Down Button***



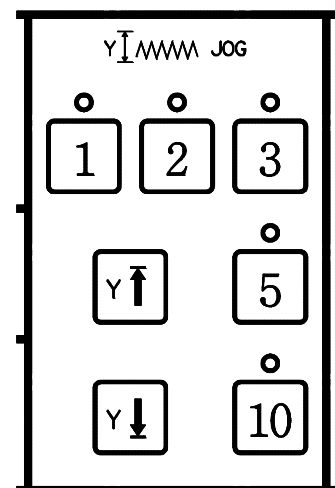
Pressing this button will bring the spindle wheel downward along the column at rapid speed; and releasing it will immediately stop the rapid downward movement of the spindle wheel.

### ***JOG Control***

The JOG control function is valid only when one of the grinding modes other than the Manual grinding mode is selected.



If the RESET button is selected and the indicator above is lit up, BOTH of the stepping-up and the stepping-down control buttons are functional.



If the indicator above the RESET button goes off but both of the indicators



above the CYCLE START and the FEED HOLD



buttons are lit up, only the stepping down control button is functional.

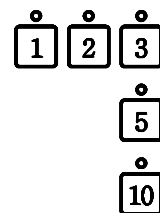
If both of the indicators above the RESET and the FEED HOLD buttons go off but the



indicator above the CYCLE START button are lit up, NONE of the stepping up and down control buttons are functional.

### ***Numeric Buttons***

The distance of one step is set by the numeric buttons: the larger number of the button is selected, the greater distance one stepping movement will be.



### ***Stepping-Up Button***



Pressing this button will bring the spindle wheel one step amount, which is set by the five numeric buttons, upward.

### ***Stepping-Down Button***



Pressing this button will bring the spindle wheel one step amount, which is set by the five numeric buttons, downward.

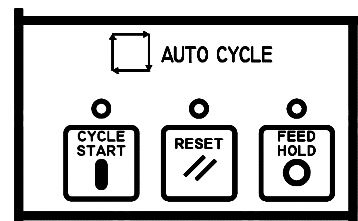
### ***AUTO CYCLE Selection***

### ***Manual Cycle Selection***

Whenever the emergency stop pushbutton is released or



when the RESET button is selected, the indicator above the RESET button will light up and the other two indicators above the CYCLE START and the FEED HOLD buttons will go off.



**Semi-Automatic Cycle Selection**

Press the CYCLE START button once, both indicators above the CYCLE START and the



FEED HOLD buttons will light up and the indicator above the RESET button will go off.

**Fully-Automatic Cycle Selection**

Press the CYCLE START button once again, the indicator above the CYCLE START



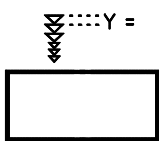
button will light up and both indicators above the RESET and the FEED HOLD buttons will go off.



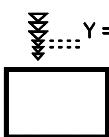
In the Surface grinding mode, the fully automatic cycle will have the spindle wheel down-feed at the time when the saddle reaches to whether the front or the rear stroke.



In the Slot grinding mode, the full automatic cycle will have the spindle wheel down-feed at the time when the working table reaches to whether the left or the right stroke.



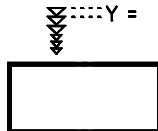
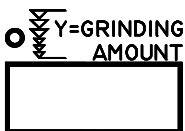
During the Rough grinding period, the down-feed amount each time equals to the value on the display for the Rough Down-Feed Amount.



During the Finish grinding period, the down-feed amount each time equals to the value on the display for the Finish Down-Feed Amount.

**The Rough Grinding Period**

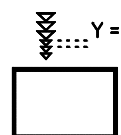
During the Rough grinding period, each down-feed will decrease the value on the display for the grinding amount in an amount equals to the value on the display for the Rough



Down-Feed Amount. The Rough grinding period will be finished when the value on the display for the grinding amount equals to the value on the display for the Total Finish Grinding Amount, and the Finish Grinding period is started.

**The Finish Grinding Period**

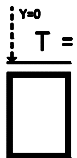
When the Finish grinding period is started, each down-feed will decrease the value on the display for the grinding amount in an amount equals to the value





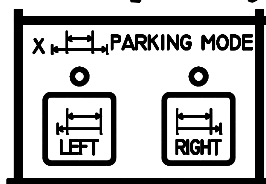
on the display for the Finish Down-Feed Amount. The Finish grinding period will be finished when the value on the display for the grinding amount reaches to zero, and the Zero grinding period is started.

**The Zero Grinding Period**



During the Zero grinding period, there is no down-feeding but the countdown of the Zero grinding times. When the value on the display for the Zero grinding times Countdown to zero, the Zero grinding period is finished.

**The Completion of the Automatic Grinding Cycle**

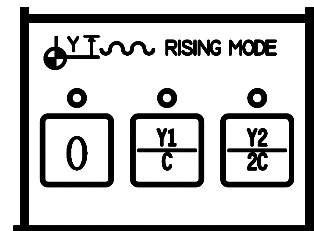


After the Zero grinding period is finished, the working table would park on the selected side; and the spindle wheel would or would not rise up according to the setting in the Spindle Wheel Automatic

Rise-Up Control and the whole Fully Automatic Cycle is



completed. At this moment, the machine is in Manual grinding mode and the original value of the grinding amount is restored.



**To Switch Between the Fully-Automatic and the Semi-Automatic Cycle**



Press the FEED HOLD button once during the Fully-Automatic Cycle, the grinding cycle will switch from the Fully-Automatic Cycle to the Semi-Automatic Cycle and the residual of the grinding amount is held intact.



When press the CYCLE START button again, the grinding cycle will switch from



the Semi-Automatic Cycle back to the Fully-Automatic Cycle, and the residual of the grinding amount will continue to be ground off.

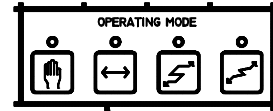


During the Semi-Automatic or Fully-Automatic Cycle, press the RESET button will stop the automatic cycle and the original setting of the grinding amount will be restored.



For safety reasons, the following control functions will be disabled during the Semi-Automatic or Fully-Automatic Cycle:

★ OPERATING MODE Selection



★ DIRECTION Control



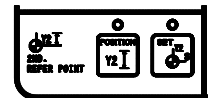
★ JOG Control during the Fully-Automatic Cycle



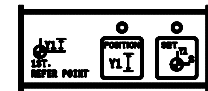
★ Stepping Down Control during the Semi-Automatic Cycle



★ Setting the 1st REFER POINT



★ Setting the 2nd REFER POINT



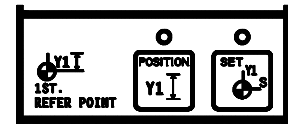
★ Zero Positioning

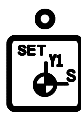


★ Change of the Grinding Amount

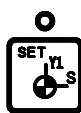
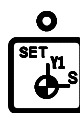


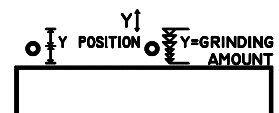
**Setting the 1st REFER POINT**



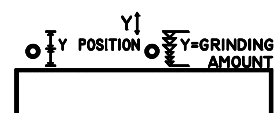
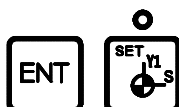
 The indicator above this button is to indicate if the 1st REFER POINT is set: if the indicator is lit up, the 1st REFER POINT is set and vice versa.

**Two Ways to Set the 1st REFER POINT**

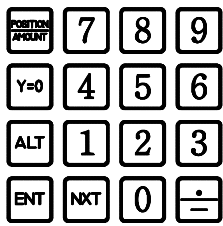
  When the indicator above the Y1 SET button is off, pressing twice the Y1 SET button within 1 second will store the current value on the display for the Y POSITION as the value for the 1st REFER POINT.



Press the ENT button together with the Y1 SET button pressed down, the value on the first row display for the Y POSITION will flash if the value for the 1st REFER POINT has been set;



otherwise, the first row display for the Y POSITION will show “---.---”. Use the numeric

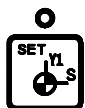


buttons, 0 to 9, to key in the desired value and end with pressing the ENT button to confirm the keyed-in value. On pressing the ENT button, the first row display will stop flashing and show the current position of the spindle wheel. By this time, the setting of the 1st REFER POINT is done.

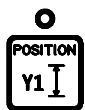
***The Requirement for Setting the 1st REFER POINT***

Value of 2nd REFER POINT ≥ Value of 1st REFER POINT ≥ Current Position

***To Position the Spindle Wheel to the Position Set by the 1st REFER POINT***



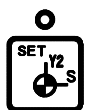
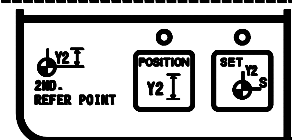
With the indicator above the Y1 SET button ON, pressing and holding down the Y1 POSITION button will move the spindle wheel upward or downward to the position set by the 1st REFER POINT. The positioning of the spindle wheel will stop when



the spindle wheel reaches to the 1st REFER POINT and the indicator above the Y1 POSITION button will light up, or when user releases the Y1 SET button.

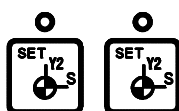
When the indicator above the Y1 POSITION button is ON, pressing Y1 POSITION button will not move the spindle wheel.

***Setting the 2nd REFER POINT***

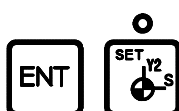
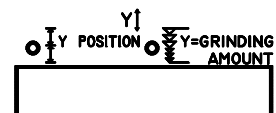


The indicator above this button is to indicate if the 2nd REFER POINT is set: if the indicator is lit up, the 2nd REFER POINT is set and vice versa.

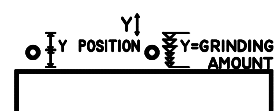
***Two Ways to Set the 2nd REFER POINT***



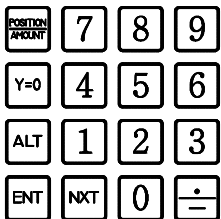
When the indicator above the Y2 SET button is off, pressing twice the Y2 SET button within 1 second will store the current value on the display for the Y POSITION as the value for the 2nd REFER POINT.



Press the ENT button together with the Y2 SET button pressed down, the value on the first row



display for the Y POSITION will flash if the value for the 2nd REFER POINT has been set; otherwise, the first row display for the Y POSITION will show “---.---”. Use the numeric

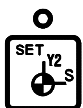


buttons, 0 to 9, to key in the desired value and end with pressing the ENT button to confirm the keyed-in value. On pressing the ENT button, the first row display will stop flashing and show the current position of the spindle wheel. By this time, the setting of the 2nd REFER POINT is done.

***The Requirement for Setting the 2nd REFER POINT***

Value of 2nd REFER POINT ≥ Value of 1st REFER POINT ≥ Current Position

***To Position the Spindle Wheel to the Position Set by the 2nd REFER POINT***



With the indicator above the Y2 SET button ON, pressing and holding down the Y2 POSITION button will move the spindle wheel upward or downward to the position set by the 2nd REFER POINT. The positioning of the spindle wheel will stop when the spindle wheel reaches to the 1st REFER POINT and the indicator above the Y2 POSITION button will light up, or when user releases the Y2 SET button.

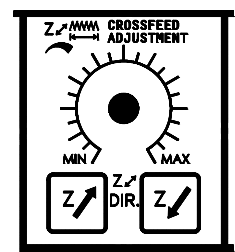


When the indicator above the Y2 POSITION button is ON, pressing Y2 POSITION button will not move the spindle wheel.

***Cross-Feed Control***



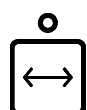
Holding down this Forward button will bring the saddle forward; the saddle will stop moving forward when this button is released.



Holding down this Backward button will bring the saddle backward; the saddle will stop moving backward when this button is released.

***In Slot Grinding Mode***

In Slot Grinding mode, neither the Forward button nor the Backward button can bring the saddle forward or backward.





## In Surface Grinding Mode



When the indicator above the RESET button is ON, or before the hydraulic pump is started, or when the hydraulic throttle valve is closed :



Holding down this Forward button will bring the saddle forward; the saddle will stop moving forward when this button is released.



Holding down this Backward button will bring the saddle backward; the saddle will stop moving backward when this button is released.



When the indicator above the CYCLE START is ON, when the hydraulic pump is started, and when the hydraulic throttle valve is released :



If the saddle is not in cross-feed increment, holding down this Forward button will move the saddle forward with one cross-feed increment. If the saddle is in backward cross-feed increment when the Forward button is held down, the direction of the saddle cross-feed increment will change from backward to forward.



If the saddle is not in cross-feed increment, holding down this Backward button will move the saddle backward with one cross-feed increment. If the saddle is in forward cross-feed increment when the Backward button is held down, the direction of the saddle cross-feed increment will change from forward to backward.

## In Zigzag Grinding Mode



In Zigzag Grinding mode when the indicator above the RESET button is ON, or before the hydraulic pump is started, or when the hydraulic throttle valve is closed :



Holding down this Forward button will bring the saddle forward; the saddle will stop moving forward when this button is released.



Holding down this Backward button will bring the saddle backward; the saddle will stop moving backward when this button is released.



When the indicator above the CYCLE START is ON, when the hydraulic pump is started, and when the hydraulic throttle valve is released :



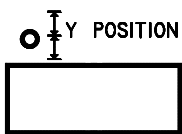
If the saddle is not in continuous cross-feed movement, holding down this Forward button will move the saddle forward continuously. If the saddle is in continuous backward cross-feed movement when the Forward button is held down, the direction of the saddle continuous cross-feed movement will change from backward to forward.



If the saddle is not in continuous cross-feed movement, holding down this Backward button will move the saddle backward continuously. If the saddle is in continuous forward cross-feed movement when the Backward button is held down, the direction of the saddle continuous cross-feed movement will change from forward to backward.

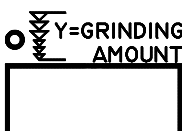
### LED Displays

#### Y POSITION Display

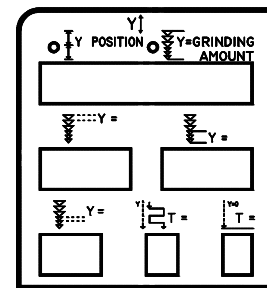


When the indicator for the Y POSITION is ON, the value on the display of the first row represents current position of the spindle wheel.

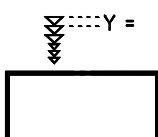
#### GRINDING AMOUNT Display



When the indicator for the GRINDING AMOUNT is ON, the value on the display of the first row represents the setting of the total grinding amount in manual period of the residual total grinding amount in automatic period.



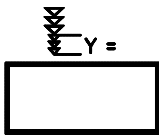
#### Rough Down-Feed Increment Display



The value on this display represents the setting of automatic down-feed increment for rough grinding. The setting of this rough grinding down-feed increment must not be larger than 500, otherwise the display of the first row

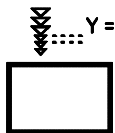
will show "E-07" alert message and in the meantime the setting will be automatically changed to 499.

**Total Finish Grinding Amount Display**



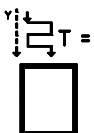
The value on this display represents the setting of the total finish grinding amount.

**Finish Down-Feed Increment Display**

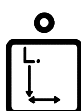


The value on this display represents the setting of automatic down-feed increment for finish grinding. The setting of this finish grinding down-feed increment must not be larger than the setting of automatic down-feed increment for rough grinding. Otherwise, the display of the first row will show "E-06" alert message and in the meantime the setting will be automatically changed to the value of automatic down-feed increment for rough grinding.

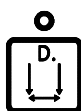
**Down-Feed Time Interval Display**



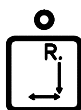
When the Slot Grinding mode is selected, this display shows the setting for the time interval between two automatic down-feeds :



When this L. button is selected and the working table travels to the left Stroke as many times as the setting for the time interval, the spindle wheel will begin down-feed increment when the working table is on the left.



When this D. button is selected and the total traveling times of the working table to the left AND to the right stroke equals the setting for the time interval, the spindle wheel will begin down-feed increment.

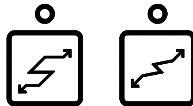


When this R. button is selected and the working table travels to the right stroke as many times as the setting for the time interval, the spindle wheel will begin down-feed increment when the working table is on the right.

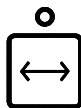
### Zero Grinding Times Display



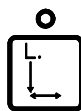
The value on this display represents the setting for the Zero Grinding times or the residual Zero Grinding times in Zero Grinding period. The Zero Grinding period begins when the value on the GRINDING AMOUNT display reaches zero, and the spindle wheel will not have any more automatic down-feed increment.



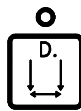
In both Surface Grinding and Zigzag Grinding modes, the value on this display for the Zero Grinding times will decrease by 1 until 0 whenever the saddle reaches to the rear or the front stroke.



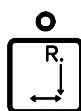
*In Slot Grinding mode,*



When the L. button is selected, the value on the display for the Zero Grinding times will decrease by 1 until 0 when the working table reaches to the left stroke.



When the D. button is selected, the value on the display for the Zero Grinding times will decrease by 1 until 0 when the working table reaches whether to the left or the right stroke.



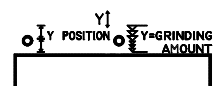
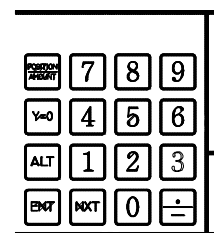
When the R. button is selected, the value on the display for the Zero Grinding times will decrease by 1 until 0 when the working table reaches to the right stroke.

### KEYPAD

#### POSITION/AMOUNT Button



Pressing this button will swap displaying the value for the Y POSITION and the value for the GRINDING AMOUNT on the display for the first row, and the respective indicator will light up as well.



***Y=0 Button***

When the indicator for the Y POSITION is ON, which means the current position is displayed, pressing this Y=0 button will reset the value on the display of the first row to 0.000.

---

***ALT Button***

When the display of the first row is still blinking with alert message but the trouble causing this alert is cleared, pressing this ALT button will clear the alert message and restore the machine back to normal operation without resetting the GRINDING AMOUNT.

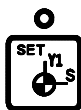
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***ENT Button***

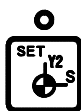
Pressing the ENT button alone can allow user to key in the value for the GRINDING AMOUNT.



Holding down the POSITION/AMOUNT button, then pressing the ENT button can allow user to key in the value for the current position.



Holding down the SET button for the 1st REFER POINT, then pressing the ENT button can allow user to key in the value for the 1st REFER POINT.



Holding down the SET button for the 2nd REFER POINT, then pressing the ENT button can allow user to key in the value for the 2nd REFER POINT.

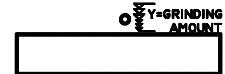
Every time after keying in the value by the numeric buttons, always press the ENT button to confirm the keying-in of the number and to end the keying-in process.

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***NXT Button***

Press the NXT button to select the item for keying-in. User can use this button to select for changing the value for the following items:

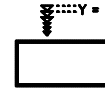
★ The GRINDING AMOUNT



★ The automatic down-feed increment for rough grinding.



★ The total finish grinding amount.



★ The automatic down-feed increment for finish grinding.



★ The time interval for Slot Grinding.



★ The Zero Grinding times.

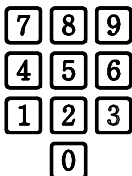


**./ - Button**



Pressing this SIGN button in setting the value for the current position (Y POSITION) will allow the user to change the sign of the keyed-in value.

**Numeric Buttons**

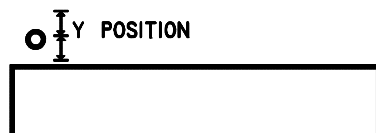


User can use these ten numeric buttons for keying in the value for each parameter.

**To Clear the Y POSITION**

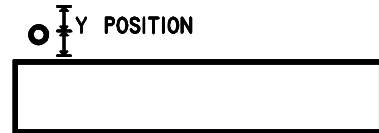


1. Press the POSITION/AMOUNT button once if the indicator for the Y POSITION display is OFF, and the indicator for the Y POSITION display will light up to indicate that the value on the display of the first row represents the current position of the spindle wheel.



2. Press the Y=0 button two times to clear the Y POSITION to Zero, and the display of the first row show "0.000".

**To Set the Y POSITION**



1. Holding down the POSITION/AMOUNT button and then pressing the ENT button will light up the indicator for the Y POSITION display, and the display of the first row will flash with the current value on the display.



2. Use the numeric buttons to key in the desired value, and the SIGN button to change the sign.



3. Press the ENT button to confirm the keying-in, and the display of the first row showing the keyed-in value will stop flashing. This ends the whole keying-in process.

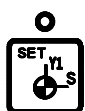
**To Set the REFER POINT Directly**



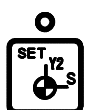
1. Move the spindle wheel to the desired position by using the Rapid



Up or Rapid Down button, or the Stepping Up or the Stepping Down button.



2. Press the SET button in for the 1st REFER POINT twice, and the indicator above this SET button will light up to indicate the setting of the 1st REFER POINT is done.

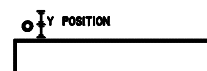


3. Press the SET button in for the 2nd REFER POINT twice, and the indicator above this SET button will light up to indicate the setting of the 2nd REFER POINT is done.

4. For safety reasons, the position of the 2nd REFER POINT shall not be lower than that of the 1st REFER POINT. In equation, that is:

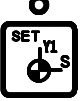

$$\text{Value of the 2nd REFER POINT} \geq \text{Value of the 1st REFER POINT}$$

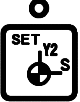

5. Should the position of the 2nd REFER POINT be lower than that of the 1st REFER POINT, the setting for the 2nd REFER POINT would be rejected and the display of the first row will flash with "E-02" alert message.





### ***To Set the REFER POINT by Numeric Inputs***

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 1. Hold down the SET button whether for the 1st REFER POINT (or for the 2nd REFER POINT), and pressing the ENT button once will turn off both the indicators for the Y POSITION and for the GRINDING AMOUNT.



 The display of the first row will flash with the former setting value or with “---.---” when there is no former setting value.


 2. Use the ten numeric buttons to key in the desired value, and use the SIGN button to change the sign of the keyed-in value.


 3. Press the ENT button to confirm the keying-in, and the display of the first row showing the keyed-in value will stop flashing. This ends the whole keying-in process.

4. For safety reasons, the value of the 2nd REFER POINT shall not be smaller than that of the 1st REFER POINT. In equation, that is:

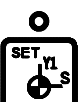

$$\text{Value of the 2nd REFER POINT} \geq \text{Value of the 1st REFER POINT}$$

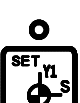

5. Should the value of the 2nd REFER POINT be smaller than that of the 1st REFER POINT, the setting for the 2nd REFER POINT would be rejected and the display of the first row will flash with “E-02” alert message.

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### ***To Clear the REFER POINTS***

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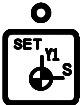
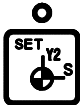


 1. If the indicator above the SET button for the 1st REFER POINT (or the 2nd REFER POINT) is ON, it indicates that the 1st REFER POINT (or the 2nd REFER POINT) is set.





 2. Press the SET button for the 1st REFER POINT (or the 2nd REFER POINT) two times, the indicator above this SET button will go OFF, and the 1st REFER POINT (or the 2nd REFER POINT) is cleared.







## To Use Positioning Function

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 1. Make sure the indicator above the SET button for 1st REFER POINT (or the 2nd REFER POINT) is On in order to use the positioning function.



 2. Press the POSITION button for the 1st REFER POINT (or the 2nd REFER POINT), and the spindle wheel will move toward and stop at the position set by the 1st REFER POINT (or the 2nd REFER POINT). When the spindle wheel is positioned, the indicator above the POSITION button will light up.



 3. During the positioning period, releasing the POSITION button for the 1st REFER POINT (or the 2nd REFER POINT) will stop the movement of the spindle wheel along the column immediately.



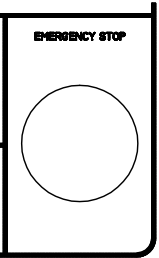


 4. When the indicator above the POSITION button for the 1st REFER POINT (or the 2nd REFER POINT) is ON, pressing the POSITION button for 1st REFER POINT (or the 2nd REFER POINT) will not move the spindle wheel along the column.

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## To Troubleshoot Alert Messages

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1. When the display of the first row flashes with “E-XX”, or “OL-XX”, or “LS-XX” alert messages, it indicates that the machine has some operation faults. Please look up the table for alert messages, and follow the recommendations to troubleshoot the faults.




 2. Pressing the ALT button, or the RESET button, or the EMERGENCY STOP button will clear alert messages on the display of the first row. However, pressing the RESET button or the EMERGENCY STOP button will restore the original setting of the GRINDING AMOUNT, while pressing the ALT button will still keep the GRINDING AMOUNT intact.

## Functions in AUTO CYCLE Control

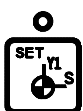
When the machine is powered ON, the indicator above the RESET button will light up while the other two indicators above the CYCLE START button and the FEED HOLD button will go OFF.



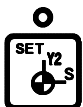
1. Whichever the Slot Grinding, or the Surface Grinding, or the Zigzag Grinding mode is selected, press the CYCLE START button once, and the indicators above the CYCLE START



button and the FEED HOLD button will light up. This represents the semi-automatic down-feed mode. Press the CYCLE START button once again, the indicator above the FEED HOLD button will go off, while the indicator above the CYCLE START button will remain ON. This represents the fully-automatic down-feed mode.



2. If the indicator above the SET button for the 1st REFER POINT (or the 2nd REFER POINT) is ON, it indicates the value of the 1st REFER POINT (or the 2nd REFER POINT) is already set. At the moment when the semi-automatic down-feed mode is selected, the control will automatically check if the current position of the spindle wheel along the column is lower than that of 1st REFER POINT (or the 2nd REFER POINT). The basic requirement for the relationship among the current position, the 1st REFER POINT, and the 2nd REFER POINT must follow the following rule :



**The Current Position  $\leq$  The 1st REFER POINT  $\leq$  The 2nd REFER POINT**

3. If the above rule is not followed, the selection of the semi-automatic down-feed mode will be rejected and the display of the first row will flash with "E-01" alert message.



4. In the semi-automatic down-feed mode, the Rapid Up button, the Rapid Down button, and the Stepping Up button will be disabled. User can use only the Stepping Down button to manually bring down the spindle wheel along the column. And the GRINDING AMOUNT will subtract the traveling distance

**that the spindle wheel is brought down by this manual Stepping Down operation. This manual Stepping Down operation will be no longer operative until the GRINDING AMOUNT is subtracted to 0.000.**

 Y=GRINDING AMOUNT

***NOTE***